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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,236	08/20/2003	Randall Kenneth Payne	390086.95401	6053

28382 7590 01/12/2007  
QUARLES & BRADY LLP  
411 E. WISCONSIN AVENUE  
SUITE 2040  
MILWAUKEE, WI 53202-4497

EXAMINER
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KJM, CHONG R

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/12/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/644,236

Applicant(s)

PAYNE, RANDALL KENNETH

Examiner

Charles Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: On page 5, paragraph 17, it is unclear what “(?)” is referring to. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Referring to claim 1, elements (b) and (c) are not sufficiently enabled by the applicant's specification. More specifically, the applicant's specification is non-enabling with regards to “defining at least two zones encompassing regions of a given tissue type” and “applying an image sharpening filter selectively to only a given one of the two zones,” as claimed.

First, the examiner was unable to find an instance in the applicant's specification that provides enabling support for “defining at least two zones encompassing regions of a given tissue type.” The closest instance appears to be on page 4, paragraph 16 to page 5, paragraph 19

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of the applicant's specification. However, while this portion of the applicant's specification provides enabling support for defining at least two zones, each zone encompassing regions of a given tissue type, it is silent with respect to defining two zones encompassing regions of a (single) given tissue type.

On page 4, paragraph 16 of the applicant's specification, it states that, "a threshold value 40 may be established...and used to sort each pixel 32 of Fig. 2 into one of **two tissue types of bone and soft tissue** depending on whether it is above or below the threshold value 40" (emphasis added). The threshold value 40 is determined by finding a local minima from the histogram 36 and is used to generate a bone pixel set 44 and a soft tissue pixel set 46 [pages 4-5, paragraphs 16-17 and figure 3]. These two pixel sets 44 and 46 define two zones--one zone encompassing regions of bone and the other zone encompassing regions of soft tissue--in the image [page 5, paragraph 19 and figure 2]. In figure 2, the cross-hatched zone represents soft tissue and the non-cross-hatched zone represents bone [page 5, paragraph 19]. Thus, the image is not defined as two zones encompassing regions of a single given tissue type as claimed, but rather defined as two zones encompassing regions of two tissue types, i.e., one zone encompassing regions of bone and the other zone encompassing regions of soft tissue.

The thresholding process described above and further disclosed in the applicant's specification is insufficient to enable one of ordinary skill to define at least two zones encompassing regions of a given tissue type. Moreover, it would not have been obvious for one of ordinary skill to define at least two zones encompassing regions of a given tissue type in view of the thresholding process described in the applicant's specification. Instead, the thresholding process described in the specification merely allows the image to be segmented into two different

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tissue types (bone and soft tissue) based on the fact that the two tissue types have two distinct ranges of pixel values 38' and 38 [figure 3]. **Once the two tissue types are determined, there is nothing the applicant's specification that would have enabled one of ordinary skill to further define two zones within a given tissue type.** For example, the applicant's thresholding process would not have enabled one of ordinary skill to define two zones encompassing regions of a given tissue type such as soft tissue, because the pixel values within this region are very similar. Accordingly, a histogram of the soft tissue region would produce a fairly flat distribution curve and therefore, would not have the two peaks and local minima that the sinusoidal distribution curve in figure 3 has. Without these features, the thresholding process would have been incapable of defining two zones within a single tissue type. Thus, an additional step would have been necessary to further define two zones within a given tissue type. This step is neither disclosed in the applicant's specification nor would it have been obvious to one of ordinary skill.

Next, the examiner was also unable to find an instance in the applicant's specification that provides enabling support for "applying an image sharpening filter selectively to only a given one of the two zones." The only enabling support the examiner was able to find in the applicant's specification was for applying a sharpening filter selectively to only one of the two tissue types, not for applying a sharpening filter selectively to only one of the two zones, where the two zones encompass regions of a given tissue type. For example, paragraph 21 on page 6 of the applicant's specification states "the bone pixel set 44 may be provided to a high-pass filter 48 which accentuates spatially high frequency components of the image." Thus, the image

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sharpening filter is selectively applied to only one of the two tissue types (the bone pixel set), not to only one of the two zones, where the two zones encompass regions of a given tissue type.

Because the step of defining two zones encompassing regions of a given tissue type is not enabled by the applicant's specification (as noted above), the step of applying an image sharpening filter selectively to only a given one of the two zones is similarly not enabled by the applicant's specification.

A similar rejection is also applicable to claim 12.

Claims not mentioned specifically are dependent from non-enabled antecedent claims.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Kim whose telephone number is 571-272-7421. The examiner can normally be reached on Mon thru Thurs 8:30am to 6pm and alternating Fri 9:30am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
ck

January 4, 2006